

CLAIMS

What is claimed is:

1. A method for applying adhesive for securing a printed circuit board to
5 a substrate, the method comprising steps of:
 providing a first printing tool with a first plurality of apertures defined
 therethrough;
 placing the first printing tool upon a surface of at least one of the printed
 circuit board and the substrate;
10 printing a first liquid adhesive onto the surface through the first printing
 tool, the first liquid adhesive forming islands of adhesive within each
 aperture;
 removing the first printing tool perpendicularly from the surface such that
 the first printing tool deforms edges of the islands of the first adhesive
15 to form a raised edge above an exposed major face of the adhesive at a
 periphery of an island; and
 curing the first liquid adhesive.

2. The method of claim 1, wherein the first liquid adhesive is a silicone-based adhesive.

3. The method of claim 1, wherein the step of curing the first liquid
5 adhesive produces a tacky adhesive that slumps a negligible amount such that the raised edge is maintained above the exposed major face of the adhesive islands.

4. The method of claim 1, further comprising the steps of:
10 placing a liner on top of the first adhesive, such that the liner contacts the raised edge of a plurality of islands; and removing the liner before laminating the printed circuit board to the substrate.

15 5. The method of claim 1, wherein the providing step provides apertures wherein the top of at least one aperture has a larger area than a bottom of the at least one aperture, such that in the removing step the smaller area of the bottom of the aperture assists in pulling adhesive material upwardly to form the raised edge around only a portion of a periphery of each island.

20 6. The method of claim 1, wherein the providing step includes providing the first printing tool with connecting portions around the apertures such that the islands formed in the removing step have connecting open pathways defined therebetween to allow outgassing to an outside environment from
25 between a laminated assembly of the printed circuit board and the substrate.

7. The method of claim 1, wherein the providing step includes providing the first printing tool with straight connecting portions surrounding rectangular apertures such that the islands formed in the removing step are aligned in a
30 regular array having straight connecting pathways defined therebetween.

8. The method of claim 1, further comprising the steps of:
providing a second printing tool with a second plurality of apertures
5 defined therethrough;
placing the second printing tool upon the surface;
printing a second thermally conductive liquid adhesive onto the surface
through the second printing tool, the second liquid adhesive forming
second islands of thermally conductive liquid adhesive within each
10 aperture;
removing the second printing tool from the surface; and
partially curing the second liquid adhesive.

9. The method of claim 1, further comprising the step of laminating the
15 printed circuit board to the substrate with the cured adhesive therebetween to
deform any raised edges on the islands to be coplanar with the major face of
the adhesive islands.

10. A method for applying adhesive for securing a printed circuit board to a substrate, the method comprising steps of:

- 5 providing a first printing tool with a first plurality of apertures defined therethrough, wherein a top of at least one apertures has a larger area than a bottom of the at least one apertures;
- placing the first printing tool upon a surface of at least one of the printed circuit board and the substrate;
- 10 printing a first liquid adhesive onto the surface through the first printing tool, the first liquid adhesive forming islands of adhesive within each aperture;
- removing the first printing tool perpendicularly from the surface such that the smaller area of the bottom of the at least one aperture pulls adhesive material upwardly to form a raised edge above an exposed major face of the adhesive around only a portion of a periphery of an island;
- 15 curing the first liquid adhesive to produce a tacky adhesive that slumps a negligible amount such that the raised edge is maintained above the exposed major face of the adhesive islands; and
- 20 laminating the printed circuit board to the substrate with the cured adhesive therebetween to deform any raised edges on the islands to be coplanar with the major face of the adhesive islands.

11. The method of claim 10, wherein the first liquid adhesive is a silicone-based adhesive.

12. The method of claim 10, further comprising the steps of:

5 placing a liner on top of the first adhesive, such that the liner contacts the raised edge of a plurality of islands; and
removing the liner before laminating the printed circuit board to the substrate.

10 13. The method of claim 10, wherein the providing step includes providing the first printing tool with connecting portions around the apertures such that the islands formed in the removing step have connecting open pathways defined therebetween to allow outgassing to an outside environment from between a laminated assembly of the printed circuit board and the substrate.

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14. The method of claim 10, further comprising the steps of:

providing a second printing tool with a second plurality of apertures defined therethrough;

placing the second printing tool upon the surface;

20 printing a second thermally conductive liquid adhesive onto the surface through the second printing tool, the second liquid adhesive forming second islands of thermally conductive liquid adhesive within each aperture;

removing the second printing tool from the surface; and

25 partially curing the second liquid adhesive.

15. An adhesive assembly comprising:

a substrate;

a printed circuit board; and

a cured first adhesive disposed in isolated islands between the printed

5 circuit board and the substrate, the first adhesive formed with a raised
edge at a periphery of each island; wherein

the assembly of the printed circuit board and substrate deforms the raised
edges on all the islands to be coplanar with an associated major face of
each island of the first adhesive.

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16. The assembly of claim 15, wherein the adhesive is a silicone-based adhesive.

17. The assembly of claim 15, further comprising a liner that is placed on
5 top of the first adhesive before assembly of the printed circuit board with the substrate, such that the liner contacts substantially the raised edge of each island; and wherein the liner is removed before assembly of the printed circuit board with the substrate.

10 18. The assembly of claim 15, further comprising a printing tool for printing the adhesive into the defined islands, the printing tool has a plurality of apertures wherein the top of the apertures has a larger area than a bottom of the apertures that serves to form the raised edges of the islands when the printing tool is removed.

15 19. The assembly of claim 15, wherein the islands of the first adhesive are formed with connecting pathways therebetween open to an outside environment from between the printed circuit board and the substrate.

20 20. The assembly of claim 15, further comprising a second thermally conductive adhesive disposed between the printed circuit board and the substrate, the second adhesive forming second islands of thermally conductive adhesive between the islands of the first adhesive such that the second islands have major faces substantially coplanar with the major faces of the first
25 islands.